CLAIMS:

1. A method for increasing the flexibility of the crystalline lens of the eye, comprising the steps of:

selecting a location within the ocular lens of an eye;

creating a microsphere at the selected location, wherein said microsphere comprises a gas-filled bubble of generally spherical shape;

repeating the steps of selecting and creating at a plurality of locations within the ocular lens; and

increasing the flexibility of the lens through the step of repeating.

2. The method of claim 1 wherein said increase in flexibility corrects an optical anomaly of the eye.
3. The method of claim 2 wherein said optical anomaly comprises a refractive error.
4. The method of claim 3 wherein said refractive error includes at least one of: myopia, hyperopia, presbyopia, regular and irregular astigmatism, and aberrations.
5. The method for increasing flexibility as set forth in claim 4, wherein the step of repeating generates at least one change in the ocular lens resulting in at least one effect selected from the group including: creation of independent microspheres, creation of microchannels, alteration of lens surface curvature, increased lens flexibility, increased accommodation, reduced light scatter, reduced rate of increase in light scatter, and reduced rate of loss of accommodation.
6. The method of claim 1 wherein said increase in flexibility increases accommodation of the lens.

7. The method as set forth in claim 1 further including the step of:

   allowing said microspheres to collapse while maintaining said increase in flexibility.

8. The method as set forth in claim 7 wherein said collapse decreases the anterior to posterior thickness of the lens.

9. The method as set forth in claim 1 wherein the increase in flexibility creates no significant change in the anterior to posterior thickness of the lens.

10. The method of claim 1 wherein the step of selecting is performed so that a microsphere created in the step of creating remains independent of any other microsphere created during the step of repeating.

11. The method of claim 10 wherein microspheres are created with a separation in the range of about 2 to about 20 μm.

12. The method of claim 1 wherein the selecting step is performed so that a microsphere created in the creating step coalesces with a microsphere created during the repeating step.

13. The method of claim 12 wherein microspheres are created with a separation in the range of about 0 to about 10 μm.

14. The method as set forth in claim 1, wherein the step of repeating generates at least one change in the ocular lens resulting in at least one effect selected from a group including: creation of independent microspheres, creation of microchannels, alteration of lens surface curvature, increased lens flexibility, increased accommodation, reduced light scatter, reduced rate of increase in light scatter, and reduced rate of loss of accommodation.

15. The method as set forth in claim 1, further comprising the step of:

    presenting antioxidants to the eye.

16. The method as set forth in claim 15 wherein said antioxidants mediate changes to the ocular lens or other ocular structures and contents.

17. The method as set forth in claim 1, further comprising the step of altering a lens capsule of the ocular lens.

18. The method as set forth in claim 17, whereby the surface area of the lens capsule is reduced by thermoplasty.

19. The method for increasing flexibility as set forth in claim 1, wherein the step of selecting primarily includes selecting locations within the adult and juvenile nuclei.

20. The method as set forth in claim 1, wherein the step of repeating generates microspheres in greater densities in a first region of the ocular lens as compared with a second region of the ocular lens so as to produce a differential flexural change between the first and second regions of the ocular lens.

21. The method as set forth in claim 20, wherein the differential flexural change produced creates an ocular lens having a more flexible equatorial region.

22. The method as set forth in claim 20, wherein the differential flexural change produced creates an ocular lens having a more flexible region near the visual axis.

23. The method of claim 1 wherein the step of creating includes changing the ocular lens through the mechanism of photodisruption.

24. The method as set forth in claim 1, further comprising the step of:

determining appropriate electromagnetic energy parameters to ensure the creation of a microsphere;

wherein said parameters are selected from parameters including: energy density, beam focality, continuity of the beam, scanning mechanism, wavelength, pulse width, pulse frequency, and cone angle.

25. A method for increasing the flexibility of the crystalline lens of the eye, comprising the steps of:

selecting a location within the ocular lens of an eye;

providing an electromagnetic energy source such as a laser;

delivering energy from said source in a converging beam;

focusing the converging beam at the selected location;

producing a power density at the selected location sufficient to create a microsphere;

creating a microsphere at the selected location, wherein said microsphere comprises a gas-filled bubble of generally spherical shape;

repeating the steps of selecting and creating at a plurality of locations within the ocular lens; and

increasing the flexibility of the lens through the step of repeating.

26. The method of claim 25 wherein the electromagnetic energy source delivers energy in the form of light energy having wavelengths in the ultraviolet, visible, or infrared regions of the electromagnetic spectrum.

27. The method of claim 26 wherein the electromagnetic energy source delivers light energy having a wavelength within the range from about 100 to about 3000 nm.

28. The method of claim 25 further comprising the step of:

examining the eye by performing at least one of the measurements including: A-scan, B-scan, and Optical Coherence Tomography (OCT).

29. A method for increasing fluid transport within a region of the ocular lens, comprising the steps of:

selecting a location within the ocular lens of an eye;

creating a microsphere at the selected location, wherein said microsphere comprises a gas-filled bubble of generally spherical shape;

repeating the steps of selecting and creating at a plurality of locations within the ocular lens; and

increasing fluid transport within the lens through the step of repeating.

30. The method as set forth in claim 29, wherein the increase in fluid transport retards cataract development.

31. The method as set forth in claim 29, wherein the step of repeating generates at least one change in the ocular lens resulting in at least one effect selected from the group including: creation of independent microspheres, creation of microchannels, alteration of lens surface curvature, increased lens flexibility, increased accommodation, reduced light scatter, reduced rate of increase in light scatter, and reduced rate of loss of accommodation.

32. The method as set forth in claim 29, further comprising the step of:

presenting antioxidants to the eye.

33. The method of claim 32, wherein said antioxidants mediate changes to the ocular lens or other ocular structures and contents.

34. The method as set forth in claim 29, wherein the step of repeating generates at least one microchannel that traverses a path running generally in the direction from posterior to anterior within the ocular lens.

35. A method for correcting an astigmatism of an eye, comprising the steps of:

selecting a location on a lens of the eye; and

altering the lens by applying a plurality of joined microspheres adjacent to each other at the selected location on the lens with a laser;

whereby the alteration of the lens reduces lens volume by cavitation, altering the surface shape of the lens.

36. The method for correcting astigmatism as set forth in claim 35 further comprising the steps of:

producing a cavity in the ocular lens; and

allowing the lens capsule and certain lens cortex tissue to collapse essentially eliminating the cavity;

whereby the lens surface topography is changed by said lens capsule collapse.